



# **STATE OF NEW HAMPSHIRE**

**2012**

## **Annual Motor Vehicle Inspection Program Report**

**July 31, 2013**

**Prepared by  
New Hampshire Department of Environmental Services  
and  
New Hampshire Department of Safety, Division of Motor Vehicles  
with the assistance of Gordon-Darby NHOST Service, Inc.**



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## **1. INTRODUCTION**

This is the 2012 Annual Report to the United States Environmental Protection Agency (EPA) on the New Hampshire motor vehicle inspection and maintenance (I/M) program for the period January 1 to December 31, 2012 (Calendar Year 2012). This report is compiled by the New Hampshire Department of Environmental Services (DES) with the assistance of the New Hampshire Department of Safety's Division of Motor Vehicles (DMV) and the state's On Board Diagnostic inspection program (OBD II) vendor, Gordon-Darby NHOST Service, Inc.

This Annual Report is required by Title 40 Code of Federal Regulations Part 51.366 and provides information on the following:

- Emissions test data;
- Quality assurance;
- Quality control; and
- Compliance and enforcement.

This report includes a narrative description of New Hampshire's OBD II program, a summary of program data, and a discussion of goals for program improvements in the coming year.

In addition to the OBD II inspection for Model Year (MY) 1996 and newer light-duty gasoline vehicles and MY 1997 and newer light-duty diesel vehicles, New Hampshire's I/M program also includes an anti-tampering inspection for pre-MY 1996 vehicles less than 20-years old (MY 1994 and newer), and a safety inspection. The anti-tampering and safety inspection data are not addressed in this report. Inspections are conducted by decentralized licensed inspection stations and are required annually statewide.

## **2. EXECUTIVE SUMMARY**

In 2012, there were approximately 1.66 million registered vehicles in New Hampshire. Of those, 1,104,651 light duty motor vehicles MY 1996 and newer received an OBD II inspection, the results of which were reported to the state electronically through the State vendor's NHOST<sup>1</sup> units utilized by licensed inspection stations. An estimated 28,919 MY 1993 to 1995 vehicles underwent a visual anti-tampering inspection and were reported through the NHOST unit, however results of anti-tampering inspections are not required to be reported through the NHOST unit, therefore this figure is not precise.

A summary of the motor vehicle I/M program results is as follows:

- 1,104,651 OBD II tests of light duty vehicles were completed.
- 28,957 light duty vehicles visual anti-tampering inspections were reported through the NHOST units<sup>2</sup>.
- 8.25% of vehicles subjected to the OBD II test failed the initial test.
- 2.05% of reported vehicles subjected to the visual anti-tampering inspection failed the initial inspection
- The overall OBD II failure rate<sup>3</sup> was 9.88% for all MY 1996 to MY 2012 vehicles. This failure rate can be broken down as follows:
  - 19.04% failure rate for MY 1996 through MY 2000 vehicles

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<sup>1</sup> NHOST is the acronym used for the NH OBD Safety Testing unit provided by the state's vendor, Gordon-Darby.

<sup>2</sup> This number may not reflect all the pre-MY 1996 vehicles that underwent a visual anti-tampering inspection as the State of NH does not require inspection stations to submit the results of non-OBD II tests electronically per RSA 266:1 VII-a. (b)

<sup>3</sup> Includes the percentage of all inspections, including re-tests.

- 8.02% failure rate for MY 2001 and newer vehicles
- An overall malfunction indicator lamp (MIL) “On” with DTCs stored rate of 3.26 % was recorded for vehicles receiving the OBD II test.

The DMV may grant a one-time economic hardship time extensions to repair OBDII indicated emission system failures on a case-by-case basis, per NH State Law RSA 266:59-b, V. A total of 115 economic hardship extensions were provided in CY 2012. Pursuant to DMV Administrative Rule Saf-C 3222.08, the economic hardship extensions may not be renewed for any vehicle even in the event of ownership transfer.

In 2012, there were no “Electronic Administrator’s Certificates issued per DMV Administrative Rule Saf-C 3222.07 for motor vehicles that were determined by the DMV to have either OBD II failures or communications issues for which no definable solution was available.

### **3. PROGRAM OVERVIEW**

#### ***3.1 APPLICABILITY OF I/M TO NEW HAMPSHIRE***

New Hampshire is subject to federal I/M requirements due to previously elevated ozone levels in the southern and seacoast portions of the state. This resulted in the establishment of three ozone non-attainment areas under the former federal 1-hour ozone standard that were later consolidated into a single, slightly smaller ozone non-attainment area under the 2008 8-hour ozone standard. On May 21, 2012, EPA designated New Hampshire “Unclassifiable/Attainment” under the 2008 8-hour Ozone NAAQS and on January 31, 2013, EPA formally approved DES’s SIP ozone redesignation request for attainment status under the 1997 8-hour ozone NAAQS. In that same approval, EPA approved a 10-year maintenance plan for the former non-attainment areas. New Hampshire is also located in the Ozone Transport Region designated under Sections 176A and 184 of the Clean Air Act.

Under strict interpretation of Clean Air Act requirements, New Hampshire is required to implement a Low-Enhanced I/M program in Hillsborough, Rockingham, Merrimack and Strafford counties. However, due to the low volume of vehicles in the state and the high cost of conducting a full tailpipe testing program, New Hampshire submitted an Alternative Motor Vehicle I/M State Implementation Plan (SIP) in 1998.

The Alternative I/M SIP demonstrated superior environmental benefits through implementation of an Enhanced Safety Inspection (ESI) program that provided: a visual anti-tampering inspection for vehicles up to twenty years older than the current model year; implementation of an On-Board Diagnostics (OBD II) inspection program throughout the entire state upon finalization of federal OBD II program rules; implementation of a roadside diesel opacity testing program for heavy duty diesel vehicles; and permanent emission reductions from a large in-state power plant. The I/M program provisions were codified in state statute RSA 266:59-b by House Bill 1513 in June 1998. In December 1998, the Environmental Protection Agency published a notice to approve New Hampshire’s Alternative I/M SIP in the Federal Register. Final approval occurred in January 2001.

The statewide anti-tampering inspection (ESI) was implemented in 1999 for 1980 and newer vehicles. This program has continued since that time, with a legislative revision to the program in 2005 that changed the vehicles subject to the inspection to be those vehicles less than 20-model-years old. EPA Region 1 office was consulted and concurred with this modification.

In April 1998, the EPA amended the federal I/M rule, moving the OBD mandatory implementation date from January 1, 1999 to January 1, 2001. DES and DOS, in consultation with EPA Region 1, began developing an OBD II inspection program that would utilize hand-held OBD scan tools and rely on a

paper-based reporting system. In September 2000 the start date was pushed back once again to January 2002. In late 2001, New Hampshire requested a one-year delay in the start date of a New Hampshire program, to January 2003, in order to implement a computer-based inspection and reporting program.

In 2002, New Hampshire released a request for proposals seeking a vendor to implement OBD II testing statewide. New Hampshire was unable to implement an OBD II program by the required start date of January 1, 2003. In June 2004, a contract with Gordon-Darby, Inc. was approved, effective through June 23, 2010 and later extended to June 30, 2012. Under this contract Gordon-Darby was required to supply all participating licensed NH inspection stations with OBDII testing hardware, software, technical support, and training on the computerized testing/reporting system known as the **New Hampshire OBD and Safety Testing** program, or “**NHOST**.”

On September 29, 2011, New Hampshire issued a Request for Proposals (RFP) to continue the OBD II inspection program and by the November 15, 2011 RFP due date, four consulting firms had responded. By December, one responding firm had withdrawn its proposal and that same month, the NH OBD Contract Proposal Review Team heard verbal presentations from the remaining three. Following several informational meetings with the Governor’s Executive Council, a five-year contract was awarded to Gordon-Darby, Inc. on May 9, 2012.

### ***3.2 NEW HAMPSHIRE’S VEHICLE FLEET***

In 2012, New Hampshire had 1,658,168 total vehicles registered and 1,641,930 registered light duty 1993 and newer vehicles requiring anti-tampering and/or OBD II inspections. Of these vehicles 1,319,244 are MY 1996 or newer light duty vehicles subject to only the OBD II test. The registration inventory represents an end of year 2012 “snapshot” of New Hampshire’s vehicle fleet. The number given for total vehicles registered includes trailers.

### ***3.3 NEW HAMPSHIRE’S I/M PROGRAM***

New Hampshire’s vehicle inspection program is administered by the New Hampshire Department of Safety, Division of Motor Vehicles (DMV) pursuant to Revised Statutes Annotated (RSA) Title XXI, Chapter 266, Section 266:59-b. The prime responsibility for air quality issues and policies falls on the New Hampshire Department of Environmental Services (DES). The two agencies work cooperatively to establish the rules to implement the program, conduct outreach and education activities, and prepare the annual report.

The NH vehicle inspection network is decentralized. As of December 31, 2012, there were 1,912 full- and part-time inspection stations operating 2,034 NHOST units or lanes. All privately owned motor vehicles are subject to an annual safety inspection within the birth month of the primary registered owner. Corporate and fleet vehicles are inspected in specified months; government vehicles are inspected no later than March. The annual light-duty vehicle anti-tampering and OBD II inspections are conducted at the same time as the safety inspection.

Light duty motor vehicles that are less than 20-years old receive an anti-tampering inspection consisting of a visual inspection for the presence and proper connection of the catalytic converter, gas cap, evaporative purge canister, positive crankcase ventilation valve and hoses, and the connection of the air injection pump/pulse air system. Per RSA 266:59-B IV, vehicle age is determined by subtracting the model year from the calendar year in which the inspection is taking place. All 1996 and newer light duty gasoline vehicles (<8,500 pounds) and MY 1997 and newer light duty diesel vehicles undergo an OBD II test in lieu of the anti-tampering inspection.

New Hampshire’s OBD II vehicle inspection program was implemented in May 2005 as an advisory only program. Vehicles underwent the OBD II test, but failed vehicles were allowed to obtain an inspection sticker and OBD II repairs were voluntary. Beginning December 1, 2006, MY 2002 and newer vehicles

were subject to a pass/fail OBD test, with failures requiring repairs in order to obtain an inspection sticker. Model year 1996 to 2001 vehicles continued under an advisory program until October 1, 2007, at which time all vehicles were subject to the pass/fail criteria, and failed vehicles need to be repaired and pass a subsequent test to obtain an inspection sticker.

New Hampshire's vehicle inspection program is enforced by use of a highly visible windshield sticker. The sticker consists of two parts, a number indicating the month of inspection and a colored backing. Failure to have a current inspection sticker is a violation that can be enforced by all local and state law enforcement officers. The fine for an expired or missing inspection sticker is \$60 (NH RSA 266:5). DMV may suspend or revoke the registration of an un-inspected vehicle, or may refuse to register it.

New Hampshire law (NH RSA 266:59b) allows motorists 60 days for repairs for OBD II failures. Motor vehicles that pass the state's safety inspection, but fail the OBD II test receive a temporary permit consisting of just the number portion of the inspection sticker. A vehicle is eligible for only one 60 day temporary permit during each inspection cycle. Motorists are likely to be pulled over for lack of the colored portion of the sticker. By presenting a copy of their OBD II test report that shows they are within their 60-day grace period, a motorist can avoid a citation. Motorists that exceed the grace period are subject to the fines and consequences noted above.

Pursuant to DMV Administrative Rule Saf-C 3222.08, New Hampshire offers economic hardship time extensions on a case-by-case basis as determined by the DMV. Such extensions are for a single inspection cycle and cannot be re-issued for a given vehicle. The hardship extensions were initiated in CY 2007. A total of 115 time extensions were provided in CY 2012. In 2012, there were no "Electronic Administrator's Certificates issued per DMV Administrative Rule Saf-C 3222.07 for motor vehicles that were determined by the DMV to have either OBD II failures or communications issues for which no definable solution was available.

## **4. OBD II PROGRAM DATA REPORT**

Title 40 Code of Federal Regulations, Subpart S, Section 51.365 contains the data collection requirements and Section 51.366 contains the data analysis and reporting requirements for motor vehicle I/M programs. A summary of New Hampshire's program is provided below. Supporting data is included in Appendices A & B of this report.

### ***4.1 SECTION 51.366 - DATA ANALYSIS AND REPORTING***

This report includes data from the entire CY 2012.

#### **4.1.1 - 51.366(a) TEST DATA REPORT**

Complete test data is provided in Appendices A & B.

*(a)(1) The number of vehicles tested by model year and vehicle type.*

In CY 2012, New Hampshire motor vehicle inspection stations inspected 1,133,608 light duty vehicles ( $\leq 8500$  pounds) that were MY 1993 and newer (subject to visual anti-tampering inspection or OBD II inspection). Of that number, 1,104,651 underwent an OBD II inspection. A total of 28,919 were documented as having undergone only a visual anti-tampering inspection. However, it must be noted that this number does not reflect all the pre-MY 1996 vehicles that possibly underwent a visual anti-tampering inspection as the State of NH does not require inspection stations to submit the results of non-OBD II

tests electronically per RSA 266:59-b I. See Appendix A “Calendar Year 2012 – Number and Type of Vehicles Tested.”

(2)(i)-(iv) *The number and percentage of vehicles passing and failing initial tests and retests model year and vehicle type.*

The passing and failing numbers and rates for initial tests and retests, and overall results on light duty vehicles, based on pre- and post-1996 model years, are summarized in the table below. Also see Appendix A (a)(1) “Calendar Year 2012 – OBD Emissions Test Results.”

Model Years '96 and later				Model Years '94 - '95			
Test		Number	Percent	Test		Number	Percent
Initial Test	Pass	1,012,251	91.75%	Initial Test	Pass	22,936	97.75%
	Fail	91,078	8.25%		Fail	479	2.05%
	Total	1,103,329			Total	23,415	
Retests	Pass	78,988	73.32%	Retests	Pass	1,189	98.43%
	Fail	28,739	26.68%		Fail	19	1.57%
	Total	117,166			Total	1208	
Overall	Pass	1,091,239	90.12%	Overall	Pass	24,125	97.98%
	Fail	119,817	9.88%		Fail	498	2.02%
	Total	1,211,056			Total	24,623	

(a)(2)(v) *The number and percentage of vehicles receiving a waiver that initially failed.*

The NH I/M Program does not allow for traditional waivers. Pursuant to DMV Administrative Rule Saf-C 3222.08, New Hampshire offers economic hardship one-year time extensions on a case-by-case basis as determined by the DMV. EPA guidance defines the I/M Waiver Rates as: “percentage of vehicles failing initial I/M test and do not have to pass a retest”. On an annual basis, economic hardship extensions meet the EPA definition of a waiver.

The I/M waiver rate is expressed as the percentage of the vehicles that fail the I/M program, not as a percentage of the entire fleet. Therefore, for 2012, the NH I/M waiver rate is:

Number of economic hardship extensions (waivers) divided by the number of vehicles failing initial OBD test:

or:  $115/91,078 = 0.13\%$  .

(a)(2)(vi) *The number and percentage of vehicles with no known final outcome (regardless of reason).*

The majority of these unknown outcomes were MY 1996 through 2001 vehicles. No final outcome (NFO) totals include: 1) vehicles that were initially tested, but not re-tested; and 2) vehicles failing initial tests and all re-tests. Re-tests that occur in different calendar years also affect the NFO totals. See Appendix A (a)(2) “Calendar Year 2012 – No Final Outcome Vehicles.”

Of the 1,104,651 vehicles that underwent OBD II testing, 17,799 or 1.61% were no final outcome (NFO) vehicles. These are vehicles that failed the initial test, first re-test and subsequent retests and “disappeared” from the system. Many of these vehicles are sold to states not requiring OBD II testing, sold for scrap, or indefinitely stored, awaiting repairs or final disposition. EPA calculates the NFO percentage by comparing the number of NFO vehicles not receiving waivers (17,529) and the number of vehicles that initially failed the OBD II test (91,078 ). This would yield a NFO percentage of 19.24%. EPA is concerned with NFO percentages exceeding the national average of 12% and in cases where states exceed this number, EPA recommends development of a Vehicle Identification Number (VIN)-based

database for vehicles failing I/M tests and don't receive a final pass. New Hampshire does track such data but lacks the resources to implement an enforcement program to ascertain the fate of NFO vehicles. In the future, New Hampshire is considering the use of a bar-code-based enforcement system wherein enforcement officers and state troopers in the field may use a mobile scan tools to check VIN-based bar codes on inspection stickers for on-road vehicles. This will allow enforcement officers to cross check on-road vehicles against the NFO database to help catch and remove illegally operating NFO vehicles. This option was not included in the 2012 – 2017 contract but during contract discussions, Gordon-Darby indicated they could provide such a mobile tool if New Hampshire wishes to pursue implementation.

*(a)(2)(xi)-(xii) The number and percentage of vehicles passing and failing the on-board diagnostic check.*

See Appendix A (a)(2) "Calendar Year 2012 - OBD Emissions Test Results."

*(a)(2)(xiii)-(xviii) The number and percentage of vehicles passing or failing the on-board diagnostic check and/or passing or failing the on-board diagnostic check and passing the tailpipe test.*

These rules are not applicable to the New Hampshire program.

*(a)(2)(xix)-(xxiii) The number and percentage of vehicles with MIL commanded on (or not) and diagnostic codes stored (or not) and readiness status.*

- (xix) 311 vehicles tested had the malfunction indicator lamp (MIL) commanded on with no codes stored, or 0.03 %
- (xx) 61,370 vehicles tested had the MIL not commanded on, and diagnostic trouble codes (DTC) stored, or 5.06%
- (xxi) 39,553 vehicles tested had the MIL commanded on and DTCs stored, or 3.26 %
- (xxii) 998,951 vehicles tested had the MIL not commanded on and no DTCs stored, or 82.37 %
- (xxiii) 73,188 vehicles tested indicated one or more modules supported by the vehicle's OBD II system were not ready for evaluation, or 6.04 % of those tested

See also Appendix A (a)(2) "2012 OBD Test Results – Light Duty Vehicles – All Test Sequences (Initial Tests and Retests.)"

*(a)(3)-(4) Initial Test Volume and Failure Rate by Model Year and Test Station.*

The complete data set of test volume and failure rates by station and model year is included with this report as an electronic addendum to Appendix B.

#### **4.1.2 - 51.366(b) QUALITY ASSURANCE REPORT**

*(b)(1)(i) The number of inspection stations and lanes operating throughout the year, and; (ii) for only part of the year.*

New Hampshire had 1,627 stations operating throughout the year, and 285 stations operating for only a portion of the year for a total of 1,912 NHOST-equipped stations. Of the 2,034 NHOST units in operation in 2012, 1,727 operated the entire year and 307 operated for part of the year.

*(b)(2)The number of inspection stations and lanes operating throughout the year that;*

*(i) Received overt performance audits in the year:*

Enforcement officers using the NHOST system overtly audited all 1,912 inspection stations during 2012.

*(ii) Did not receive overt performance audits in the year:*



There were no NHOST-equipped inspection stations that were not audited at least once in 2012.

*(iii) Received covert performance audits in the year:*

No covert audits were performed. The NHOST system uses sophisticated analyses of all OBD data and various “triggers” (discussed below) to identify anomalies and irregularities that might indicate fraud. This QA system allows the DMV to monitor a statewide decentralized system more effectively and efficiently<sup>4</sup>.

*(ii) Did not receive covert performance audits in the year:*

None of the 1,912 stations and 2,034 NHOST units received traditional covert audits in 2012.

*(v) That have been shut down as a result of overt performance audits:*

A total of 39 stations and 49 mechanics were investigated because of the Trigger Analysis data auditing. Of those investigations, 23 hearings were held in CY 2012, these results:

- Licenses revoked: 2 stations; 3 mechanics
- Licenses suspended 5 years: 3 mechanics
- Licenses suspended 1 to 5 years: 6 stations; 12 mechanics
- Licenses suspended 3 months to 1 year: 10 stations; 13 mechanics

*(b)(3) Covert audits:*

Straight review of station-specific OBD II test data is a relatively inefficient approach to identifying anomalous stations. Instead, DOS has worked with Gordon-Darby to develop and use sophisticated electronic analysis “triggers” to evaluate the performance of the decentralized inspection stations and inspectors that comprise the New Hampshire I/M program network.

The triggers based analytical reports are produced on an on-demand basis by DMV staff to monitor inspections on an ongoing basis and to assist in investigations of specific stations or to search for particular patterns of potential violations or anomalies. For the system-wide reports, those stations flagged for review are submitted to State Police Troop G for follow-up. Reports are also run for specific stations when requested by Troopers as part of their semi-annual audit of an inspection station. These individual reports are kept with the case files only in the event of successful disciplinary action and are not summarized annually. As a result of this system, copies of *periodic* reports are not available for submittal to EPA, since they were not produced by the data system. However, data regarding the failure rate for CY 2012 is available in Appendix B.

OBD triggers analysis was applied to the existing data to conduct remote overt audits of inspection stations to monitor fraud within the decentralized network of inspection stations. The use of trigger analysis maximizes the efficacy of available DOS staff resources in overseeing station/inspector performance. Easy identification of stations and inspectors that appear to have inconsistent test results enables DOS to quickly focus further investigative activities directly on these problem performers. This approach is much more efficient than spending large amounts of time analyzing data from the complete set of more than 1,900 decentralized inspection stations operating in the New Hampshire I/M program.

The concept of using analysis triggers for identifying questionable station/inspector performance, particularly in decentralized inspection networks, is fairly well known in the I/M industry and to EPA. In fact, personnel now working for New Hampshire’s I/M contractor, Gordon-Darby, previously developed a comprehensive triggers best practices report<sup>5</sup> for EPA while working for the air quality consulting firm of

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<sup>4</sup> The NH DMV considers the triggers analysis to be a form of overt auditing because station owners submit their inspection data to the DMV electronically with no expectation of privacy.

<sup>5</sup> “QA/QC Procedures Based on Program Data and Statistical Process Control Methods for I/M Programs,” prepared for U.S. Environmental Protection Agency, Certification and Compliance Division, by Sierra Research, Inc., Report No. SR01-10-02, October 2001.

Sierra Research. A key element of the triggers analysis method is to compare the performance of each station or inspector in an inspection network against the performance of the other stations/inspectors. By comparing relative performance, these computational methods minimize the impact of possible biases in the test data. Another important element is to ensure that analysis datasets are of sufficient size to ensure statistically significant results; i.e., that station and inspector anomalies are not just occurring because of the small number of tests involved with these stations/inspectors.

The New Hampshire analysis triggers essentially follow the basic approaches and computational methods discussed in the referenced Sierra Research report. Key elements include:

- Use of robust computational methodologies based on the referenced best practices document. For example, low volume stations or inspectors and those with low subgroup volumes (i.e., for certain model years) are excluded from analysis to ensure statistically valid results.
- Comparison of individual inspection station/inspector performance relative to the rest of the inspection network in order to identify poorly performing outliers.
- Use of certain triggers (e.g., OBD fingerprinting) to compare inspection results to Gordon-Darby developed truth tables to identify likely instances of fraudulent testing<sup>6</sup>.
- Standardization of triggers to obtain a standard scale of performance. Lower scores indicate better performance and higher scores reflect poorer performance. This enables comparison of all results on an equal basis as well as meaningful graphical presentations.
- Development of selectable analysis periods, including capability to perform before-and-after analysis of station/inspector performance relative to audits and other enforcement visits.
- Automated functionality that enables quick drill-down and root pattern analysis of inspections conducted by identified poor performers.

Specific triggers programmed into New Hampshire's automated I/M data system includes the following:

- OBD Test Rejection Rate (Failure Rate)
- OBD Communication Protocol
- OBD Readiness Monitors
- Safety Defect
- No Voltage
- Weighted Trigger Score (WTS)

The listed Safety Defect trigger applies to New Hampshire's automated vehicle safety inspection and is therefore not relevant to this discussion of OBD performance triggers. The remaining triggers are applicable. The first of these, OBD Failure Rate, achieves the same objective but in a much more efficient manner as would a comprehensive analysis of station-specific test results from the entire New Hampshire I/M network, by flagging stations that have either an abnormally high, or abnormally low failure rate.

The OBD Communication Protocol and Readiness Monitors triggers are powerful tools designed to identify suspected instances of clean scanning, in which a clean vehicle is fraudulently tested in place of the vehicle actually subject to OBD inspection. They compare OBD test results collected from all the stations to those contained in truth tables developed by Gordon-Darby. Such "OBD fingerprinting" has been found to be an excellent method for quickly identifying problem OBD test performers.

Trigger analysis results available to New Hampshire DOS from the automated I/M data system enable DOS staff to efficiently and effectively pursue follow-up investigations and enforcement actions against problem stations and inspectors. Using this triggers method, 640 stations were audited.

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<sup>6</sup> For this analysis, the NH inspection results are run against the GD truth tables are compared by the software.

*(b)(3)(i)-(iv) The number of covert audits conducted with the vehicle set to fail and resulting in a false failing.*

None of the 2,034 NHOST-equipped inspection stations received a covert performance audit.

*(b)(4)(i)-(ii) The number of inspectors and stations that were suspended, fired, or otherwise prohibited from testing.*

A total of 39 stations and 49 mechanics were investigated because of the Trigger Analysis data auditing. Of those investigations, 23 hearings were held in CY 2012, with these results:

- Licenses revoked: 2 stations; 3 mechanics
- Licenses suspended 5 years: 3 mechanics
- Licenses suspended 1 to 5 years: 6 stations; 12 mechanics
- Licenses suspended 3 months to 1 year: 10 stations; 13 mechanics

It is the inspection station's responsibility to inform the DMV when an inspector is fired. Upon receiving written notice from an inspection station that an inspector no longer works at the station, that inspector's ability to access the NHOST system is removed by the DMV. The DMV also maintains a "sticker denial" list that prevents inspection stations from purchasing state inspection stickers if they refused to participate in the electronic reporting program or in the event they are suspended as a result of an administrative hearing. This approach is extremely successful in gaining compliance. Specific numbers are not available, however, because the list changes from day-to-day. Upon first implementation, approximately 100 stations were listed. This number gradually dropped until leveling off at approximately 40 stations.

*(b)(4)(iii) The number of inspectors and stations that received fines.*

The DMV evaluates circumstances on a case-by-case basis and normally seeks suspensions rather than imposing fines for violations of I/M rules. Two stations did receive fines as a result of administrative hearings in 2012.

*(b)(5) The number of inspectors licensed or certified to conduct testing.*

In CY 2012, 5,762 inspectors were licensed in New Hampshire.

*(b)(6)(i)-(ii) The number of hearings held to consider adverse actions against inspectors and stations and resulting in adverse actions against inspectors and stations*

In CY 2012, there were 23 hearings for emissions-related rules infractions.

*(b)(7) The total amount collected in fines from inspectors and stations by type of violation.*

IN CY 2012, a total of \$3,200 in fines was imposed as the result of overt or covert audits. It is DMV policy to seek suspensions rather than impose fines for violations of I/M rules in most cases.

*(b)(8) - (9) The total number of covert vehicles and covert auditors available for undercover audits over the year.*

None. As previously discussed, in section (b)(3), the NHOST system analyses of OBD data provides for easy and cost effective identification of stations and inspectors that appear to have inconsistent test results. This enables DOS to quickly focus further investigative activities on these problem performers more efficiently than covert auditing.

### **4.1.3 - 51.366(c) QUALITY CONTROL REPORT**

- (c)(1) The number of emission testing sites and lanes in use in the program.*
- (c)(2) The number of equipment audits by station and lane;*
- (c)(3) The number and percentage of stations that have failed equipment audits; and*
- (c)(4) Number and percentage of stations and lanes shut down as a result of equipment audits.*

NH's OBD-based inspection program does not utilize emissions testing equipment subject to equipment quality control audits, such as those specified in sections 51.359(a), (b), (c), and (d). The NHOST system does comply with the performance features and functional characteristics of computerized emission test systems as outlined in 51.538(a) and (b), respectively. The NHOST system also meets the requirements of the following regulations:

- § 85.2207 On-board diagnostics test standards
- § 85.2222 On-board diagnostic test procedures
- § 85.2223 On-board diagnostic test report
- § 85.2231 On-board diagnostic test equipment requirements

The NHOST system continually monitors both individual unit/component performance and overall system operations. Issues with equipment, such as failures and malfunctions, are often dealt with directly by Gordon-Darby and the station operators. In 2012, Gordon-Darby managed a variety of equipment issues, most of which were resolved by merely replacing parts/supplies due to normal wear/usage. All equipment issues were resolved and there were no shut downs as a result of equipment audits. Of the 4,008 issues, 1,060 were fixed on-site, 933 were managed by shipping replacement parts/supplies to the station and 2,013 were fixed by telephone-based troubleshooting. The greater number of issues arising in 2012 (as compared to 1,531 in 2011) resulted from Gordon Darby's upgrading computers in all 1,912 inspection stations. This number is expected to drop as problems in new equipment are addressed and operators become familiar with the new equipment.

Accuracy of the vendor's equipment has not been an issue. Because the NHOST system continually monitors individual unit/component performance as well as overall system operations, there were no "failures," but rather, requests for technical support and/or parts replacement. The vendor is responsible for maintaining and supporting the testing equipment, there were no issues with incompatible testing equipment.

The document security required by paragraph (e) of this section is satisfied by New Hampshire's program. The inspection stickers issued during the annual inspection are each identified with a unique serial number and DMV distributes the stickers in a manner in which all stickers can, and are, easily accounted for. Inspection Stations are required to keep unused stickers in a secure area.

### **4.1.3 - 51.366(d) ENFORCEMENT REPORT**

- (1)(i) An estimate of the number of vehicles subject to the inspection program, including the results of an analysis of the registration data base.*

In CY 2012, all MY 1993 and newer passenger cars and light duty trucks are subject to either visual emissions components inspection or OBDII. This results in a fleet of approximately 1,641,930 subject vehicles.

- (1)(ii) The percentage of motorist compliance based upon a comparison of the number of valid final tests with the number of subject vehicles.*

1,104,651 subject vehicles ('96 and newer; < 8,500 lbs) were tested for OBD II during 2012. NHDMV records indicate that 1,319,244 subject vehicles were registered in the state in NH resulting in a compliance rate for vehicle OBD tests of 84%.

The compliance rate for the pre-1996 vehicles subject to the visual anti-tampering inspection can not be quantified. State Statute RSA 266:59-b (I) exempted inspection stations from transmitting the pre-1996 vehicle inspection results electronically. As a result, there is no central database of the inspection outcomes for this vehicle cohort.

*(d)(1)(iii) The total number of compliance documents issued to inspection stations;*

*(d)(1)(iv) The number of missing compliance documents;*

See: (d)(4)(i) below.

*(d)(1)(v) The number of time extensions and other exemptions granted to motorists*

There were 115 time extensions granted to motorists in 2012. In additions, in CY 2012 two (2) "Electronic Administrator's Certificates" as defined in Section 2 were issued by the DMV.

*(d) (1)(vi) The number of compliance surveys conducted, number of vehicles surveyed in each, and the compliance rates found.*

No compliance surveys were conducted.

*(d)(2) Registration denial based enforcement programs.*

New Hampshire does not have a registration denial based enforcement program.

*(d)(3) Computer-matching based enforcement programs.*

New Hampshire does not have a computer-matching based enforcement program.

*(d)(4)(i) - (ii) Sticker-based enforcement systems shall provide the following additional information on enforcement: (regarding sticker security and vehicle classification fraud)*

New Hampshire's I/M program is enforced via clearly visible inspection stickers on the windshield of each registered vehicle. Sticker inventory is maintained by the DMV's Bureau of Registration. All inspection stickers are accounted for either as sold to an inspection station or as returned to the DMV. In CY 2012, a total of 1,412,969 inspection stickers were issued to inspection stations. The Department of Safety's mainframe IDMS database codes sticker inventory records as sold, returned-used, returned-unused, or reported stolen, damaged, or lost. For CY 2012, the inspection sticker database showed the following:

Returned Tab – Sticker Used:	1,306,656
Returned Unused:	65,366
Reported Stolen:	309
Reported Lost:	353
Returned Damaged:	13,551

Not returned by year's end: 26,734<sup>7</sup>

Inspection sticker inventory and distribution is controlled and monitored by the DMV. Administrative rules require all inspection stations to keep all inspection sticker booklets secured at all times. Highway Patrol officers verify this with spot checks of inspection stations. The rules also require every inspection station to immediately notify the local police and the DMV in the event that they discover or suspect that any inspection stickers may have been lost or stolen. The serial numbers of any stickers that have been reported lost or stolen are entered into the DOS's mainframe database and Highway Patrol officers are assigned to investigate all such incidents. All safety inspection stickers contain a variety of security features, which are specifically designed to prevent counterfeiting. The serial number of each inspection sticker, which is affixed to a vehicle after it has passed the annual safety inspection, is reported to the DMV by the inspection station issuing the sticker electronically. Inspection sticker data for all OBD-required inspections are automatically reported electronically and entered into the Vehicle Inspection Database (VID). This facilitates system wide compliance, quality assurance, and reduces the time and resources necessary to investigate and prosecute inspection sticker fraud and counterfeiting.

*(d)(4)(iii) Sticker-based enforcement systems shall provide the following additional information regarding parking lot surveys.*

In CY 2012, NH Enforcement Officers did not conduct any parking lot sticker surveys. In New Hampshire un-inspected vehicles are not illegal unless they are being operated on a public way. The windshield compliance sticker used to identify vehicles with a valid safety and OBD II inspection are routinely looked for by both State and local law enforcement officials. Therefore, routine traffic enforcement detects the majority of un-inspected vehicles if they are being driven on the state's roadways.

Although New Hampshire does not conduct parking lot sticker surveys, the NH State Police uses data from the Gordon-Darby NHOST system's VID (Vehicle Inspection Database) to closely monitor compliance by both inspection stations and individual motorists. A secure Internet portal to the NHOST system's VID is accessible to only authorized DMV personnel. Custom software, included as part of Gordon-Darby's service to the State of New Hampshire, analyzes all inspection data on all vehicles and all inspection stations to identify anomalies and inconsistencies that might indicate fraud. By employing a sophisticated system of triggers and trends analysis, the NHOST system is able to flag individual tests, inspection stations, or even individual mechanics as being worthy of further scrutiny. DMV staff is also able to run ad hoc queries against the VID to analyze data from any desired perspective and to scrutinize individual tests, inspection stations, mechanics, or vehicles.

In addition to the visual enforcement program discussed above, New Hampshire's program effectively prevents motorists from falsely registering a vehicle out of the program area as the program is statewide, or changing the fuel type or the weight class on the vehicle registration. The proprietary software that is used throughout the New Hampshire OBD program is designed to recognize the OBD "fingerprint" of every vehicle tested. This is accomplished by decoding the VIN, analyzing the various engine system readiness monitors and other factors, and then comparing these results to the expected profile of the vehicle being tested. In CY 2012, NH State Police Troopers utilized this and other high-tech applications for monitoring and enforcement of the State's I/M program.

#### **4.1.5 - 51.366(e) ADDITIONAL REPORTING REQUIREMENTS**

Additional Reporting Requirements are included in the 2010 – 2012 Biennial Report.

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<sup>7</sup> This number includes sticker booklets that are still being used. Inspection stations have 30 days to return used sticker booklets (25 per book) to the DMV following the end of the month in which the last sticker in the booklet was issued

## **5. GOALS FOR 2012 and 2013**

On May 9, 2012, New Hampshire awarded Gordon Darby, Inc. a 5-year contract to continue the State's I/M program. During the RFP and contract award process, New Hampshire set program goals that Gordon Darby and New Hampshire would focus on:

- On-Demand Sticker Printing
- Development and implementation of five new triggers for detecting inconsistencies.
- Education and Outreach

The status of each goal is:

On-Demand Sticker Printing – In an on-demand sticker printing system, each test unit has the ability to print individual stickers upon completion of a test. Each test and sticker information are recorded digitally and stored in a central database. On-demand printing would replace the present system where blank stickers are pre-printed in book form, stored centrally and shipped to inspection stations upon request. Upon contract award, none of New Hampshire's 1912 full- and part-time inspection stations were equipped with test units having the capacity to print stickers. In 2012, Gordon Darby replaced the computers in all 1,912 inspection stations in preparation for on-demand sticker printing. However, the present pre-printed sticker system was implemented through a combination of laws adoption, rule changes and policies that must be revoked or amended to allow New Hampshire to change to an on-demand system. Presently, DMV legal staff is undertaking a review of all applicable regulations and policies and is developing proposals for the necessary legislative changes. In the meantime, the pre-printed sticker system is still in place.

Triggers – This goal has been met. In addition to existing triggers, Gordon Darby developed and implemented five new triggers in 2012:

- Readiness mismatch
- Protocol mismatch
- EVIN mismatch
- Sticker gap
- Time between tests

Through the use of existing and new triggers, enforcement staff are alerted to inconsistencies in the testing and reporting procedures leading to overt inspections. In 2012, New Hampshire hired 8 Enforcement Officers replacing the 8 state troopers previously in charge of enforcement. The 8 Enforcement Officers, mostly former auto mechanics well-versed in OBD testing, have been trained by state troopers and have the power to enforce State laws and regulations. Unlike the previous state troopers, the Enforcement Officers are full-time OBD II program inspectors and completed at least one inspection of all 1912 test stations in 2012. Although enforcement cases have been low in 2012, the increased number of inspections resulted in many more warnings and citations being issued and if problems persist, these warning and citations will result in a considerable increase in 2013 enforcement actions.

Education and Outreach – Inspection station staff are the “salespersons” to motorists for the New Hampshire I/M program. Past experience has shown that both inspection station staff and motorists need outreach and education especially in the area of OBD failures. In many cases, inspection station staff lack the knowledge and expertise to properly deal with motorists' questions following an OBD failure and motorists generally lack sufficient knowledge to properly respond to receiving an OBD test failure. In 2012, NH DES, NHDMV and Gordon Darby staff met to begin planning for education and outreach. In 2013 and 2014, NHDES, NHDMV and Gordon Darby are planning to provide five “training/listening sessions” for NHHOST inspection stations focusing on:

- Program and technical updates
- Dealing with vehicle OBD failures
- Dealing with motorists with vehicles failing OBD
- Regulatory and policy changes

Further, NHDES, NHDMV and Gordon Darby will develop media messages to better educate motorists of their responsibility and options following an OBD failure for their vehicle.

Based on input from The Governor's Executive Council the OBD Advisory Committee was asked to explore the option of exempting low mileage vehicles (vehicles that travel less than 100 miles per month or 1,000 miles per year) from OBD testing. In 2012, NHDES investigated such exemptions offered in other states but implementation of a waiver will require Rules changes and this procedure, if implemented, will be rolled in with other regulatory changes implemented to replace the pre-printed sticker system with an on-demand printing system.



## **Appendices A & B**

### **Anti-tampering and OBD II Inspection Data Report Tables**

Appendix B is Attached in Electronic Format (CD)